



Program. controller, 15 relays

MCX152V

Electronic controller suitable for all HVAC/R software application needs.

Description

MCX152V is a standard MCX electronic controller that stands on the top of MCX range thanks to its large number of input and output and two integrated electronic expansion valves drivers. It is available in the version with or without graphic LCD display, and 110 / 230 V AC or 24 V AC power supply.

It holds all the typical functionalities of MCX controllers: programmability; connection to the CANbus local network; up to two Modbus RS485 serial communication interfaces.

The memory card assures SW and bios download; the ethernet port allows the monitoring with the web pages, the SW and bios download, the data logging and the warning for the alarms.

Features & Benefits

- Inputs: 14 analog and 18 digital; Outputs: 6 analog and 15 digital
- Power supply 24 V AC and 110 V / 230 V AC
- Up to two drives bipolar and unipolar electronic expansion valves
- SD / MMC card slot for easy software upload and datalogging
- Remote access to data through CANbus connection for additional display and keyboard
- RTC clock for managing weekly time programs and data logging information
- Ethernet / WebServer option
- Two Modbus RS485 opto-insulated serial interface
- Available with graphic LCD display and without display for showing the desired information
- Dimensions 16 DIN module

Ordering

Product code numbers








Product Type	Material Description	Real time clock	Packing format	Quantity per packing format	Code number
MCX152V	MCX152V Elect.Control 24V LCD 2RS485 ETH	Yes	Single pack	1	080G0284
MCX152V	MCX152V Elect.Contr 230V LCD 2RS485 ETH	Yes	Single pack	1	080G0285
MCX152V	MCX152V Elect.Control 24V 2 RS485 S	Yes	Single pack	1	080G0313

Note: Single pack codes include standard kit connectors.

Overview

Product portfolio

Table: Portfolio overview

MCX family	MCX06C	MCX06D	MCX061V	MCX08M2	MCX152V	MCX15B2	MCX20B2
Product image							
Power supply	24 V	24 V	24 V or 110/230 V	24 V or 110/230 V	24 V or 110/230 V	24/110/230 V	24/110/230 V
Built-in display (optional)	LED	LCD	LCD	LCD	LCD	LCD	LCD
Analog Inputs	4	4	7	8	14	10	16
Digital Inputs	6	8	8	8	18	22	22
Analog Outputs	2	3	3	4	6	6	6
Digital Outputs	6	6	6	8	15	15	20
EXV driver embedded			1		2		
RS485	1	1	1	1	2	1	2
CANbus	•	•	•	•	•	•	•
Ethernet / Web server			optional		optional	•	•
USB/Memory Card			•		•	•	•
Dimensions (1 DIN module = 17,5 mm)	33 x 75 mm	4 DIN	8 DIN	8 DIN	16 DIN	16 DIN	16 DIN

Product details

General data

Table: General features

Features	Description
Power supply	85 – 265 V AC, 50/60 Hz Maximum power consumption: 30 W, 51 V A Insulation between power supply and the extra-low voltage: reinforced
	24 V AC \pm 15% 50/60 Hz SELV Maximum power consumption: 30 W, 47 V A Insulation between power supply and the extra-low voltage: functional
Plastic housing	DIN rail mounting complying with EN 60715
	Self extinguishing V0 according to IEC 60695-11-10 and glowing/hot wire test at 960 °C according to IEC 60695-2-12
Ball test	125 °C according to IEC 60730-1 Leakage current: \geq 250 V according to IEC 60112
Operating conditions	CE: -20T60 / UL: 0T55, 90% RH non-condensing
Storage conditions	-30T80, 90% RH non-condensing
Integration	In Class I and / or II appliances
Index of protection	IP40 only on the front cover
Period of electric stress across insulating parts	Long
Resistance to heat and fire	Category D
Immunity against voltage surges	Category II
Software class and structure	Class A

Input/Output

Table: Analog inputs

Type	Num	Specifications
		Max 15 V input voltage Do not connect voltage sources without current limitation (overall 80 mA) to analog inputs while unit is not powered Open circuit HW diagnostics available for all analog inputs
0 / 1 V 0 / 5 V 0 / 10 V	14	AI1, AI2, AI3, AI4, AI5, AI6, AI7, AI8, AI9, AI10, AI11, AI12, AI13, AI14 Impedance is 33 k Ω (by software can be set greater than 1M Ω)
NTC	14	AI1, AI2, AI3, AI4, AI5, AI6, AI7, AI8, AI9, AI10, AI11, AI12, AI13, AI14 NTC temperature probes, default: 10 k Ω at 25 °C
0 / 20 mA 4 / 20 mA	8	AI1, AI2, AI3, AI5, AI8, AI9, AI10, AI12 0 / 20 mA; 4 / 20 mA
Pt1000	8	AI1, AI2, AI3, AI7, AI8, AI9, AI10, AI14
Differential input	2	AI5(-), AI6(+); AI12(-), AI13(+) Differential input, DM Voltage 0...300 mV; CM voltage max 14 V
Auxiliary Supplies	2	15 V+ and 5 V+ 5 V+ max: 140 mA (total on all outputs) 15 V+ max: 200 mA (total on all outputs)

Table: Digital inputs

Type	Num	Specifications
Voltage free contacts	16	DI1, DI2 Frequency input: 200 Hz Max (pulse time about 2.5 ms) DI3, DI4, DI5, DI6, DI7, DI8, DI9, DI10, DI11, DI12, DI13, DI14, DI15, DI16 Frequency input: 20 Hz Max (pulse time about 25 ms)
24 V optoins	2	DI17, DI18 Digital Inputs optoinsulated 24 V AC / 50/60 Hz o 24 V DC Rated current: 5 mA
230 V AC optoins	2	DI17, DI18 Inputs optoinsulated, 230 V AC / 50/60 Hz Basic insulation Rated current: 2 mA at 230 V AC; 1 mA at 110 V AC Note: When the 230 V AC DI17H input is used, the corresponding 24 V DI17 input is not available anymore; the same for the couple of inputs DI18H and DI18.

Table: Analog outputs

Type	Num	Specifications
0 / 10 V DC	6	AO1, AO2, AO3, AO4, AO5, AO6 Minimum load 1 k Ω (10 mA)
PWM, PPM	2	AO3, AO6 <ul style="list-style-type: none"> pulse output, synchronous with mains, at modulation of impulse position (PPM) or modulation of impulse width (PWM): 6.8 V open circuit pulse output, PWM with range from 20 Hz to 1 kHz: 6.8 V open circuit

Table: Digital outputs

Type	Num	Specifications
Relay	15	<p>Concerning the insulation distance there are three groups of relays:</p> <ul style="list-style-type: none"> group 1: relays 1 to 8 group 2: relays 9 to 12 group 3: relays 13 to 15 <p>Insulation between relays: functional</p> <p>Insulation between relays of group 1 and 2 and 3: reinforced</p> <p>Insulation between relays and the extra-low voltage parts: reinforced</p> <p>C1-NO1 to C12-NO12</p> <p>Normally open contact relays 5 A</p> <p>Characteristics of each relay:</p> <ul style="list-style-type: none"> 5 A 250 V AC for resistive loads - 100.000 cycles 3 A 250 V AC for inductive load - 100.000 cycles with $\cos(\phi) = 0.4$ UL: 1/8 hp, C300 pilot duty, 125 / 250 V AC, 30.000 cycles <p>C13-NO13 to C15-NO15</p> <p>Normally open contact relays 16 A</p> <p>Characteristics of each relay:</p> <ul style="list-style-type: none"> 7 A 250 V AC for resistive loads - 100.000 cycles 3.5 A 250 V AC for inductive load - 230.000 cycles with $\cos(\phi) = 0.4$ UL: 6 A resistive, 240 V A, 30.000 cycles, 1/2 hp, 470 V A pilot duty, 240 V AC, 30.000 cycles <p>C1-NO1 to C3-NO3, C13-NO13 to C15-NO15</p> <p>Optionally they can be solid state relays</p> <p>Characteristics of each relay:</p> <ul style="list-style-type: none"> 15-280 Vrms, 1 A UL: 1 A resistive, 240 V AC, 30.000 cycles

Table: Stepper motor

Type	Num	Specifications
Bipolar and unipolar stepper driver	2	<p>ST1, ST2, ST3, ST4</p> <p>Bipolar and unipolar stepper motor output:</p> <p>Danfoss ETS / KVS / ETSC Valves (green, red, black, white)</p> <p>Saginomyia UKV / SKV / VKV / PKV (black, red, yellow, orange)</p> <p>Other valves:</p> <ul style="list-style-type: none"> drive mode 1/8 microstep peak phase current: 650 mA (RMS 460 mA) max drive voltage 30 V max output power 6.5 W max speed 200 steps/sec <p>Max distance between valve and MCX: 30 m (suggested: 10 m)</p>



Table: Battery backup

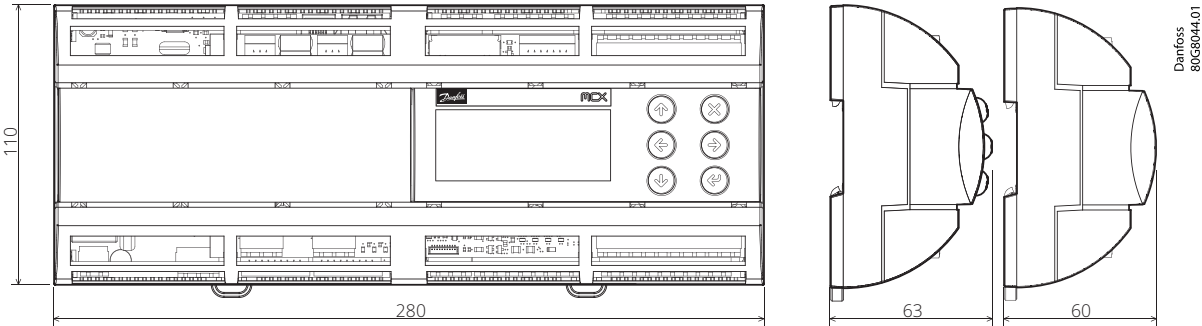
Type	Num	Specifications
	1	BATT 18 – 24 V DC: <ul style="list-style-type: none">leakage current max 12 µAmax battery current: 0.85 A at 18 V

Table: Memory card

Type	Num	Specifications
SD/MMC	1	SD/MMC <ul style="list-style-type: none">for data logging make sure that the memory card is firm in placeavoid installations with vibrations

Dimensions & weights

Figure: Dimensions



User Interface

Table: User Interface

Type	Features	Description
LCD display	Display	STN blue transmissive
	Backlight	White LED backlight adjustable via software
	Contrast	Adjustable via software
	Format	128 x 64 dots
	Active visible area	58 x 29 mm
Keyboard	Number of keys	6
	Keys function	Set by the application software



Connections

Figure: Top Board

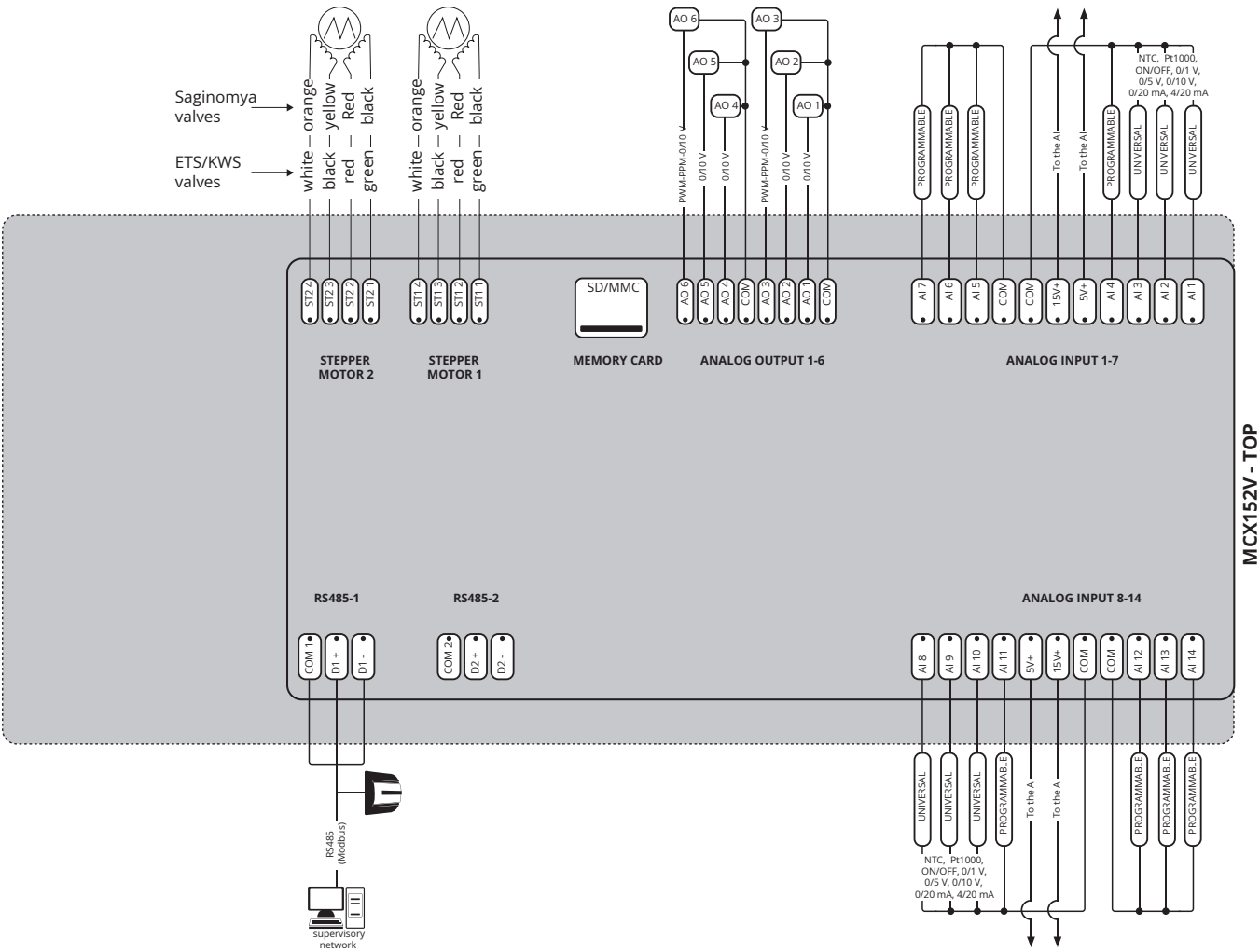
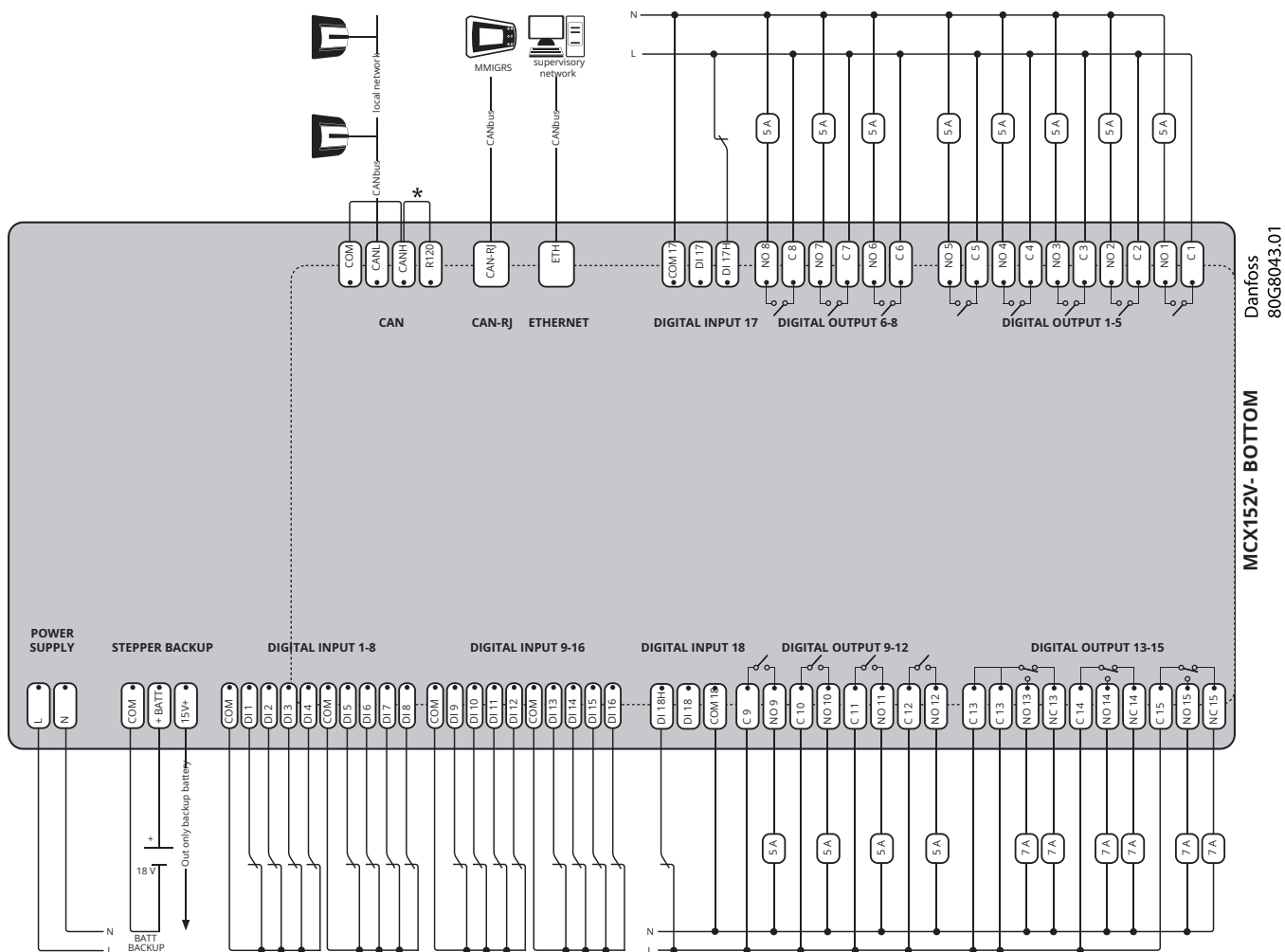


Figure: Bottom Board

**Note:**

*Connection has to be made on the first and last local network units, make the connection as close as possible to the connector

Table: Top Board

Connectors	Type	Dimensions
Stepper motor connector 2	4 way spring-cage plug-in connector type	<ul style="list-style-type: none"> pitch 2.5 mm section cable 0.2 – 0.5 mm²
Stepper motor connector 1	4 way spring-cage plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Memory card connector	SD / MMC card slot	
Analog output 1-6 connector	8 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Analog input 1-7 connector	11 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
RS485 connector	3 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
RS485-2 connector	3 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Analog input 8-14 connector	11 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²

Figure: Bottom Board

Connectors	Type	Dimensions
CAN connector	4 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
CAN-RJ connector	6/6 way telephone RJ12 plug type	
Ethernet connector	8/8 way RJ45 plug type	
Digital input 17 connector	3 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Digital output 6-8 connector	6 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Digital output 1-5 connector	10 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Power supply connector	2 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Stepper backup connector	3 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Digital input 1-8 connector	10 way spring-cage screw plug-in connector type	<ul style="list-style-type: none"> pitch 2.5 mm section cable 0.2 – 0.5 mm²
Digital input 9-16 connector	10 way spring-cage screw plug-in connector type	<ul style="list-style-type: none"> pitch 2.5 mm section cable 0.2 – 0.5 mm²
Digital input 18 connector	3 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Digital input 9-12 connector	8 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²
Digital input 13-15 connector	10 way screw plug-in connector type	<ul style="list-style-type: none"> pitch 5 mm section cable 0.2 – 2.5 mm²

Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
EU-UK Declaration	Danfoss EU-UK 080R1226.02	Danfoss	LVD
EU-UK Declaration	Danfoss EU-UK 080R1224.02	Danfoss	LVD
Manufacturer's Declaration	Danfoss MD 080R1240.00	Danfoss	EU RoHS
EAC Declaration	EAC KZ 7100841.13.12.01062	EAC - Eurasian Customs Union	EMC
Electrical Safety Certificate	EAC KZ 7100841.01.01.01245	EAC - Eurasian Customs Union	LVD
UA Declaration	Danfoss UA 9032	Danfoss	UA RoHS
UA Declaration	Danfoss UA 8537	Danfoss	UA RoHS
Electrical Safety Certificate	UL E31024	UL - Underwriters Laboratories inc.	
Export Control Declaration	MCX programmable controllers	Danfoss	
Export Control Declaration	MCX Programmable Controllers (w. WIFI/BT)	Danfoss	

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Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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